

## ABSTRACT OF THE DISCLOSURE

## LONG-SPAN LEAD SCREW ASSEMBLY WITH ANTI-BACKLASH NUT

A lead screw assembly having a lead screw rotatable within a hollow tubular portion of a reinforcing rail. A nut engages with threads of the lead screw and is  
5 movable along the reinforcing rail. The lead screw includes plurality of first threaded portions having an outer diameter and extending lengthwise of the lead screw; and at least one second gap portion having an outer diameter that is less than the outer diameter of the first threaded portions. The second gap portion is positioned between adjacent first threaded portions of the lead screw. At least one generally U-shaped  
10 bearing is secured within the reinforcing rail and contacts the lead screw at a second gap portion. Each U-shaped bearing supports the lead screw along its length as the screw rotates within the rail, so that the lead screw assembly can be safely operated at high speeds over comparatively long distances while minimizing whipping and vibration of the lead screw. The reinforcing rail can include a base portion which permits the  
15 assembly to be securely mounted to a support structure at any convenient location along its length.

An anti-backlash nut assembly includes a threaded follower for engagement with the threads of a lead screw. A pair of wedges bias the follower in a radial direction so that the threads of the follower are brought into forcible engagement with the mating  
20 threads of the screw. In a preferred embodiment, the nut assembly is adjustable to provide variable levels of backlash resistance and wear-compensation.